# The Carbon Capture and Storage Opportunity in Asia

Transition Finance Insight

# Introducing our first Transition Finance Insight

Investment momentum around Carbon Capture and Storage (CCS) has grown substantially over the last 12 months. There are now more than 700 projects in development across the CCS value chain with many reaching Final Investment Decision (FID) stage, as part of a broad portfolio of solutions - alongside renewable energy and electrification - helping to decarbonise hard-to-abate sectors.

The International Energy Agency has outlined that 1Gt of $CO_2$ per year needs to be captured to meet the Net Zero Emissions by 2050 (NZE) Scenario. Demand for CCS will continue to increase to meet this and finance and expertise will be needed at every step, given that these projects require significant volumes of capital alongside complex financing structures.

In the UK, take-up of CCS is accelerating, and through our dedicated CCS capability within our Transition Finance offering, we supported the first CCS project to come to market, namely, the East Coast Cluster and HyNet industrial cluster. Today, we continue to be involved and active on transactions across our global network.

We anticipate that the near-term expansion of CCS will likely occur in the Middle East, Europe and North America, prompted by progressive project sponsors and policy incentives.

But there is also a strong focus on the development of CCS across Asia, where cross-border initiatives are gaining traction. In markets like Singapore, for example, CCS technologies are being considered as part of comprehensive strategies to support decarbonisation where economies and supply chains are still intertwined with carbon intensive industries.

Across our global network, we have deep local expertise in our home markets in Asia. Given this, combined with our CCS expertise, our first **Transition Finance Insight** focuses on the factors at play around CCS in Asia - and specifically across ASEAN. In this article, we share our views on the CCS opportunity across the region and what this means for our markets.

**Ben Daly**

Managing Director and Global Head, Transition Finance

# The CCS opportunity in Asia

## Overview

As part of our **Transition Finance Insight** series, this briefing outlines the CCS opportunity in Asia. After exploring its potential, we identify challenges to implementation, as well as key levers that could help overcome them. This approach builds on our expertise and insights gained advising on financing CCS and developing partnerships across the CCS value chain.

## The market today

Many of the world's fastest-growing economies are found in Asia, where markets face the dual challenge of sustaining economic growth while delivering on climate commitments. To address this challenge, markets including Indonesia, Malaysia, and Singapore are positioning themselves as future CCS leaders, exploring cross-border $CO_2$ storage as part of an integrated approach to decarbonisation.

At the same time, hard-to-abate sectors like refineries and chemicals are facing increasing pressure to decarbonise but may not yet have the solutions or capabilities to rapidly reduce carbon emissions, creating a strong and urgent use case for CCS.

# Outlining the opportunity

## A bridge to decarbonisation

Markets across Asia, including China, India, and Indonesia, have some of the highest carbon emissions globally. The emissions generated in these markets mainly stem from power generation and industries like steel, cement and petrochemicals. For these industries, complete decarbonisation may not be immediately possible, owing to factors such as the economic viability of innovative technologies or growing power demand.

CCS could provide a solution where decarbonisation is challenging, enabling the continued use of energy infrastructure while reducing emissions, as businesses and industries transition. As such, while CCS is not a standalone solution, it serves as a bridge to support decarbonisation, especially across sectors where alternative solutions (e.g. renewables or electrification) are not yet feasible.

## Supporting and balancing growth

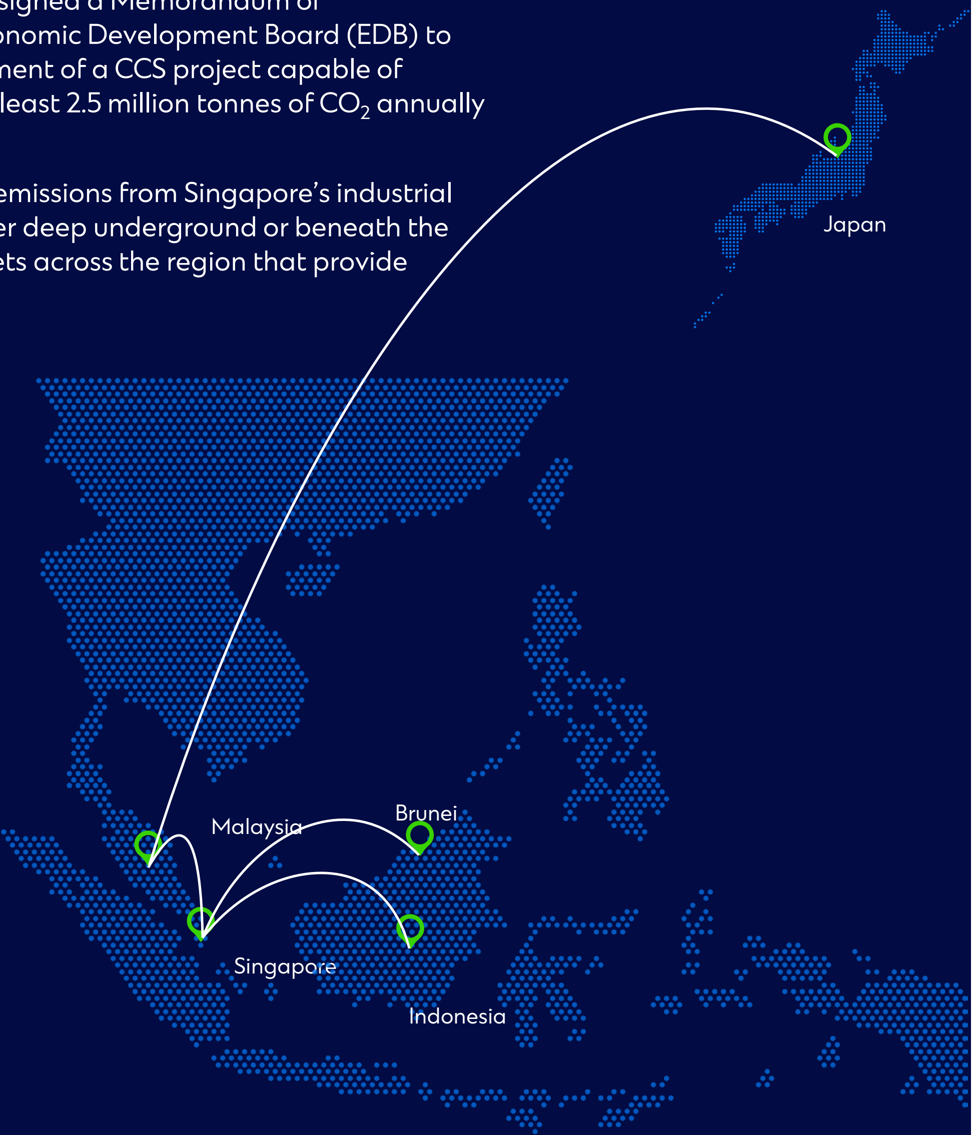
By capturing emissions at source - particularly in sectors like steel, chemicals and power - CCS enables continued industrial development while supporting progress towards net zero targets. For markets across Asia, the opportunity could lie in leveraging CCS not only as a compliance tool, but as a catalyst for clean industrial competitiveness, cross-border cooperation, and investment inflows. One example of this is the S-Hub, established to support the development of a cross-border CCS project, created to help reduce Singapore's $CO_2$ emissions given that Singapore has limited access to alternative and renewable energy, and still heavily relies on natural gas for its power supply. The S-Hub project has the potential to play an important role in supporting the delivery of Singapore's carbon emission reduction targets, and ambition to reach net zero by 2050.

### Case study: S-Hub cross-border initiative

In December 2023, S-Hub, a consortium comprising ExxonMobil Asia Pacific Pte. Ltd. and Shell Singapore Pte. Ltd., signed a Memorandum of Understanding with the Singapore Economic Development Board (EDB) to coordinate the planning and development of a CCS project capable of capturing and permanently storing at least 2.5 million tonnes of $CO_2$ annually by 2030.

The project focuses on capturing $CO_2$ emissions from Singapore's industrial sectors and securely storing them either deep underground or beneath the seabed, with support offered by markets across the region that provide this storage capability.

This cross-border initiative is part of Singapore's broader strategy to decarbonise hard-to-abate sectors such as energy, chemicals, power, and waste, and build a portfolio of decarbonisation measures to help meet the markets' climate change ambitions.




- Memorandum of Understanding (MOU) with **Indonesia** to collaborate on carbon capture and storage (Feb 2024)
- Memorandum of Understanding (MOU) with **Japan** to collaborate on carbon capture and storage technologies
- Memorandum of Understanding (MOU) with **Malaysia** on transboundary carbon capture and storage (Jan 2025)

## Strengthening regional cooperation to deliver shared outcomes

CCS development can be a powerful catalyst for regional cooperation and infrastructure development, creating shared value chains across borders. Transboundary CCS can foster collaboration between markets with high emissions and those with suitable geological storage, strengthening economic partnerships and technology sharing across Asia.

Cross-border $CO_2$ transport networks – such as pipelines and shipping routes – also spur investment in regional infrastructure, improving connectivity and industrial innovation.

This, in turn, helps to facilitate new business opportunities.

Developing such cross-border projects requires investing billions of dollars to establish multiple capture facilities, aggregation (collective buying), long-distance transportation infrastructure, and large-scale storage assets. These ambitious undertakings also require a comprehensive suite of financial services, such as project finance, structuring support, and risk management, to help crowd in capital and determine an effective risk sharing model.

### Case study: CCS growth in the UK creates template for global adoption

Close to half of the UK's emissions are attributed to two major industrial areas - Teesside and Humber. To address these emissions, the East Coast Cluster (ECC) was created.

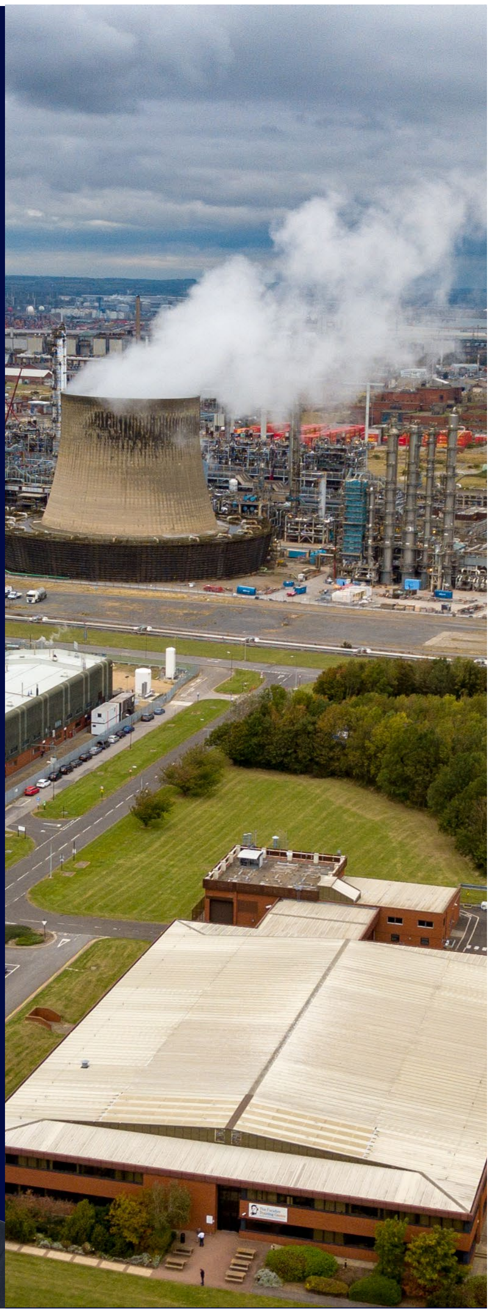
Led by BP, Equinor and TotalEnergies, the ECC in the Teesside and Humber industrial region in the UK is a collaboration between global energy leaders and regional industry, backed by the UK Government. Its aim is to capture and securely store up to 4 million tonnes of $CO_2$ annually by 2030, equivalent to removing 1.5 million cars from the road each year, to help the UK achieve its ambition to reach net zero by 2050.

By contributing to financing two critical components and enablers of the ECC – the Northern Endurance Partnership and Net Zero Teesside Power – Standard Chartered helped facilitate this project and the decarbonisation of hard-to-abate emitters in the region.

As a global leader in transition finance, we help establish scalable models for CCS financing, recognising its role as one of the key tools available to support the reduction of carbon emissions, while facilitating energy security and long-term growth. The East Coast Cluster demonstrates how public-private collaboration, innovative financing and robust technology can unlock the potential of CCS at scale and we believe that this project paves the way for the global adoption of CCS as a bankable solution to decarbonise the highest emitting sectors.

**Leonidas Theodorou**

Director, CCUS, H2 & Low Carbon Fuels



# Addressing challenges to unlock scale

## Across Asia, there are three core challenges when scaling CCS:

### Insufficient or unclear frameworks

Developing CCS projects is challenged by the lack of carbon pricing frameworks, CCS-specific regulations, and unclear risk allocation across the value chain. For example, low-probability but high-impact geological risks – such as $CO_2$ leakage in storage – are difficult for private sector sponsors to manage, especially in the absence of regulatory clarity or private-public risk-sharing mechanisms. With limited commercial solutions available, financiers face hurdles in committing to CCS deployment.

### Lacking cross-border regulatory alignment

Cross-border regulation is yet to align, especially for projects involving $CO_2$ transport and storage across national boundaries. As such, there is no harmonised legal or technical framework governing transboundary $CO_2$ movement, creating uncertainties for project developers and financiers.

### Supply chain readiness

The development of the CCS value chain itself, including capture technologies, and $CO_2$ transportation needs to be further developed. Building out the value chain – from capture points to regional storage hubs to cross chain insurance solutions – will be essential to unlocking CCS at scale in Asia.

## Overcoming these challenges will require:

### Roll out of CCS regulation

Frameworks are needed to support CCS development, including $CO_2$ criteria and cross-border conditions. Indonesia has established three ministerial and presidential CCS regulations since 2023, and Malaysia's Parliament has passed the Carbon Capture, Utilisation and Storage (CCUS) Bill 2025, but further implementation details and commercial structures are needed if we are to scale CCS.

### Ongoing harmonisation of standards across markets

Markets across the region are already working together to establish transboundary carbon capture and storage, support knowledge sharing and discuss government-to-government agreements. This work needs to continue and go further, to remove friction across and between markets.

### Partnerships to build out the cross-border value chain

Commercial partnerships will be key to facilitating the build out of the value chain among emitters, transport providers, and potential CCS hub operators. The insurance sector also has a role to play and is actively developing a first-of-its-kind solution covering complex value chain risks, e.g. environmental damage and loss of revenue, for commercial-scale CCS facilities.

# CCS in Asia holds significant potential

CCS presents an opportunity for Asia to pursue business models that could help remove carbon from the atmosphere, while supporting ongoing growth. International banks, such as Standard Chartered, have demonstrated a willingness to support these initiatives and acknowledge their potential. However, careful consideration of risk is essential to ensure the successful development and execution of these multibillion-dollar projects.

While still nascent, CCS stands out as a strategic opportunity for Asia to accelerate decarbonisation, seek more sustainable growth, and foster regional collaboration and innovation. We're committed to supporting our clients on this journey, leveraging our extensive global network and in-depth sector expertise.

**Yingying Chen**

Director, Transition Finance

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